



FUJITSU Software ServerView Suite

Scripting Toolkit V4.4

User Guide

© Copyright Fujitsu Technology Solutions GmbH 2015

All hardware and software names used are trademarks of their respective manufacturers.

All rights, including rights of translation, reproduction by printing, copying or similar methods, in part or in whole, are reserved.

Offenders will be liable for damages.

All rights, including rights created by patent grant or registration of a utility model or design, are reserved.

Delivery subject to availability. Right of technical modification reserved.

Contents

1	Preface.....	5
2	Scripting Toolkit.....	1
2.1	About This Guide	1
2.2	Target Audience.....	1
2.3	Safety Notes	1
2.4	Notational Conventions	2
3	Deployment Concept.....	3
3.1	Overview.....	3
3.2	Scope of ServerView Scripting Toolkit	4
3.3	The Repository Structure	5
3.3.1	Script collection	5
3.3.2	Hardware profiles	5
3.3.3	Software profiles.....	6
3.3.4	States	6
3.3.5	Tools.....	6
3.3.6	BMC Configuration.....	7
3.3.7	AddOn software	7
3.4	Deployment Process	9
3.4.1	Sample Script Structure.....	9
3.4.2	Environment variables.....	10
3.4.3	Using SAVE Mode.....	15
3.4.4	Using DEPLOY Mode	15
3.4.5	Step-by-step mode	17
4	Set up WinPE.....	19
4.1	Set up ServerView Installation Manager WinPE.....	19
4.1.1	Using ServerView IM WinPE on CD/DVD	20
4.1.2	Using ServerView IM WinPE with USB.....	20
4.1.3	Using ServerView IM WinPE with PXE	21
4.2	Prepare your own WinPE.....	22
4.2.1	Setting up drivers	22
4.2.2	Add other components	23
4.2.3	Adjust the WinPE's free memory	23
4.2.4	Set up WinPE for the ServerView Scripting Toolkit	23

5	Configuring and Installing a PRIMERGY Server.....	25
5.1	Set up OS driver structure with ServerView IM	25
5.2	Install a PRIMERGY Reference System with ServerView IM	25
5.3	Repository.....	26
5.4	Capture Server Hardware Configuration.....	26
5.5	Prepare an unattended Windows installation	26
5.6	Modifying the answer file.....	27
5.7	Start Unattended Installation.....	27
6	Utilities	29
6.1	Additional utilities required	29
7	Addendum	31
7.1	Supported Systems.....	31
7.2	Supported Controllers.....	33
7.3	Released Utilities Versions	33
7.4	Supported Operating Systems	33
7.5	Restrictions	33
7.6	Deployment Process Examples.....	35
7.6.1	Install W212 R2 on RX300S8 WinPE x64 with BIOS configuration	35

1 Preface

The ServerView Scripting Toolkit is a collection of utilities and sample scripts for the configuration and installation of PRIMERGY systems using WinPE with 64-bit architecture. WinPE 5 is supported but most tools and all scripts are probably also suited for other x64 WinPE versions.

The toolkit's tools and scripts can be used to install a target PRIMERGY system by replicating the hardware configuration of a PRIMERGY reference system or by configuring the system's hardware directly. Windows Server 2012 and Windows Server 2012 R2 installation is supported.

This guide describes the utilities provided in this toolkit and how they can be employed in a scripting environment to considerably simplify and automate the configuration and installation process of PRIMERGY systems. It is intended as a reference for using the ServerView Scripting Toolkit for the deployment of PRIMERGY servers.

The ServerView Scripting Toolkit contains:

- A collection of controller configuration utilities and other useful tools
- A collection of documented deployment scripts for an easy start
- Documentation
- A description on how to generate your own WinPE deployment environment
- A description on how to use ServerView Installation Manager's pre-configured WinPE as deployment environment

The ServerView Scripting Toolkit is located

- on the ServerView Software (SVS) DVD in the directory
<DVD Root>\SVSSoftware\Software\Deployment\PRIMERGY Scripting

or

- on Fujitsu Technology Solutions' support website
http://download.ts.fujitsu.com/prim_supportcd/start.html
follow *ServerView Suite – Deployment Tools*.

Things you need before getting started:

ServerView Suite V11.15.01 or later

2 Scripting Toolkit

2.1 About This Guide

This user guide is intended as a reference for using the ServerView Scripting Toolkit for deployment of PRIMERGY servers.

2.2 Target Audience

This guide is targeted at experienced administrators who are familiar with the servers of the PRIMERGY family from Fujitsu Technology Solutions and have a good knowledge of WinPE.

2.3 Safety Notes



Caution!

Improper use of the toolkit utilities can result in loss of critical data.

Because of the potential risk of data loss, only experienced individuals should use the toolkit utilities. Before using the toolkit, you must take all necessary precautions to ensure that mission-critical systems remain online if a failure occurs.

2.4 Notational Conventions

The following notational conventions are used in this manual:

Typewriter text	Indicates elements of the syntax that must be entered exactly as shown in the 'Syntax' section.
<i>Italics</i>	Indicates variables, arguments or file names
[]	Indicates an optional entry (an option or argument enclosed in square brackets may be specified), i.e. the entry is not mandatory.
	Indicates an alternative option (none, one or more of several options or arguments can be specified).
...	Indicates that one or more options or arguments can be specified several times.
Bold	Used for highlighting in the text.
"Quotes"	Indicates cross-references to other chapters or manuals.
	Warning sign indicating that your health, the correct functioning of your system, or the security of your data may be at risk if you ignore the information given at this point.
	Indicates additional information, notes and hints.

3 Deployment Concept

3.1 Overview

The ServerView Scripting Toolkit is intended to enable users to duplicate an existing reference sever configuration to several identical target servers or to configure any number of servers directly.

The scripting process of the ServerView Scripting Toolkit features two modes of operation. 'SAVE' mode can be used to save the hardware configuration of a PRIMERGY reference system. In 'DEPLOY' mode the target systems are either configured with the saved hardware profile or can be configured directly with the desired configuration.

The scripting process is configured via a single batch file. It can be run as a complete deployment process or step-by-step.

The hardware profile consists of BIOS and RAID controller settings of the reference system. The profile is saved in files and stored in a repository which can be placed on CD or DVD for local access or on a network drive.

The OS installation files are prepared by creating a software profile which contains all OS files, PRIMERGY server drivers, customized scripts, and parameters for unattended Windows installation. Windows Server 2012 and Windows Server 2012 R2 installation is supported.

The configuration and installation process is fully scriptable and is initiated from a bootable 64-bit architecture WinPE medium. During the installation process the hardware and software repository must be accessible. For logging and to be able to save data files, a write-accessible location of sufficient size must be available.

To help you get started sample scripts that are documented in detail through comments are included in the ServerView Scripting Toolkit.

3.2 Scope of ServerView Scripting Toolkit

The utilities provided with the toolkit enable administrators to save hardware settings (BIOS; RAID configuration) of a PRIMERGY reference system and apply these settings to a PRIMERGY target system on a fully automated and unattended basis. These utilities can also be used to configure the hardware settings of a PRIMERGY system directly before installing the target system.

Configuration of the Baseboard Management Controller (iRMC) is also supported.

Starting the deployment process directly via a pre-configured bootable medium with 64-bit architecture WinPE is the basic concept of the toolkit, which gives the administrator the flexibility to easily integrate the utilities provided in the toolkit into existing deployment environments for automated configuration and installation of servers. The deployment process can be run as a whole or step-by-step.

The scripting examples provided set up a scripted process to run an unattended configuration and Windows OS installation of all supported PRIMERGY systems.

All sample scripts are documented in detail through comments to serve as further documentation reference.

3.3 The Repository Structure

In the toolkit's installation directory you find a folder named *repository* which is already preconfigured to serve as repository for the deployment process on your deployment server (repository root) when shared with the appropriate permissions.

It contains all necessary scripts and tools for a scripted deployment process.

3.3.1 Script collection

The folder *SCRIPTS32* contains a collection of sample scripts which are intended to help you start your own deployment process. The sample scripts are documented in detail in the comments of the scripts. Change or add to these sample scripts to reflect your own environment.

Example:

```
<RepositoryRoot>\SCRIPTS32
```

3.3.1.1 Folder *SVIM*

The folder *SVIM* within *SCRIPTS32* contains all files necessary to use ServerView Installation Manager's WinPE as deployment environment with the ServerView Scripting Toolkit. See chapter ["4 Set up WinPE"](#) for details.

3.3.2 Hardware profiles

The *HW_PROF* folder in the toolkit directory holds all files needed for the hardware configuration during the deployment process, where *HW_PROF\<SystemName>* contains the hardware-relevant files for the system.

Example:

```
<RepositoryRoot>\HW_PROF\TX300S8
```

3.3.3 Software profiles

The *<SoftwareProfile>* folder in the toolkit directory holds all scripts and tools needed for the OS installation of the example deployment process.

The software folder holds the OS installation source (e.g. *setup.exe* and the *sources* folder of a Windows OS DVD) and system specific folders which contain system-specific data (e.g. OS drivers) for particular systems.

After the installation of the ServerView Scripting Toolkit the *<SoftwareProfile>* folder reads *SW_PROF*. Replace this with the name of the OS you want to install, e.g. W2K12 or W2K12R2. Add more software folders for other Windows versions if necessary.

Example:

```
<RepositoryRoot>\W2K12\setup.exe
<RepositoryRoot>\W2K12\sources
<RepositoryRoot>\W2K12\RX300S8\Drivers

<RepositoryRoot>\W2K12R2\setup.exe
<RepositoryRoot>\W2K12R2\sources
<RepositoryRoot>\W2K12R2\BX920S4\Drivers
```

3.3.4 States

The scripts use the *STATES* folder in the repository to create status log files which are intended to monitor the installation process. For each PRIMERGY system a machine-specific subfolder (using the system's serial number) will be created, which will contain the log files and progress state during the deployment process.

Example:

```
<RepositoryRoot>\STATES\<SerialNumber>
```

3.3.5 Tools

All WinPE utilities distributed with the ServerView Scripting Toolkit are located in the folder *TOOLS64* to be used in 64-bit WinPE.

Example:

<RepositoryRoot>\TOOLS64

**Note:**

To use the AddOn-Software feature with the OS installation, you need to provide the tool *imagex* from the Microsoft's Windows Automated Installation Kit or from the OEM Preinstallation Kit.

Place the x64 version of *imagex* into a folder *imagex* within the *ITOOLS64* folder.

3.3.6 BMC Configuration

To configure a PRIMERGY's Baseboard Management Controller (iRMC) a configuration file containing commands for the BMC is used (see *scu.cfg* in the repository). All configuration values defined in the SCCI specification (see *SCCI_CS.pdf* in the *Manuals* folder), may be configured using this command file. See *SetEnv.cmd* for details.

To configure a BMC do the following:

- Place *scu.cfg* in folder <RepositoryRoot>\HW_PROFI<SysName>
- Edit *scu.cfg* according to your needs, e.g. set the BMC's network configuration or configure users.

In same way the current configuration of specified values can be retrieved during SAVE mode.

In any mode the results of the process can be found in the file

<RepositoryRoot>\HW_PROFI<SysName>\res_<SerialNumber>.xml

3.3.7 AddOn software

The <SW_ADDON> folder in the toolkit directory is designed to hold all files required for the AddOn Software Installation. The folder needs to be filled with data from the ServerView Software (SVS) DVD if AddOn software is supposed to be installed as follows:

- Copy <DVDroot>:\SVSSoftware\Software\Other_Tools\Javal\windows\jre-<version>.exe to ISW_ADDON\JRE\jre.exe.
- Copy <DVDroot>:\Firmware\Tools\Primeup\<newest_version>\PrimeSetup.exe to ISW_ADDON\PrimeUp.
- Copy folder <DVDroot>:\Firmware\PrimSupportPack-Win to ISW_ADDON\PrimSupportPack-Win.

- Copy folder `<DVDroot>:\Firmware\Agent-Win` to `ISW_ADDON\Agent-Win`.

**Notes:**

To use the AddOn-Software feature with OS installation, you need to provide the tool *imagex* from the Microsoft's Windows Automated Installation Kit or from the OEM Preinstallation Kit.

Place the x64 version of *imagex* into a folder *imagex* within the *ITTOOLS64* folder.

Depending on the deployment environment the scripting process can be configured to generate and use the AddOn Software WIM from a specific folder (ID-Number) for each target or to use a pre-configured AddOn Software WIM from a system-specific location. See *SetEnv.cmd* for detailed information.

3.4 Deployment Process

The deployment process provided with the sample script collection of the ServerView Scripting Toolkit has two modes ('SAVE' and 'DEPLOY') which are intended to either save the configuration of a server or to deploy and install a target server.

Deployment is realised with a scripted process that is typically initiated via a bootable WinPE medium. The deployment process can be run as a whole or step-by-step. See *Ms.cmd* for details.

3.4.1 Sample Script Structure

- *autoexec.cmd*
Start of deployment process.
- *SetEnv.cmd*, *NewSetEnv.cmd*, *Sli.cmd*
Deployment environment configuration, see batch file for details.
- *Mss.cmd*, *Sdai.cmd*, *ScciCS.vbs*
System detection and identification.
- *Ms.cmd*
Master script, deployment process control.
- *<various>.cmd*, *<various>.vbs*
Helper scripts for various purposes.



Note:

All scripts are documented in detail in the comments. Please refer to the scripts for detailed information about the scripting process.

3.4.2 Environment variables

The scripting process uses environment variables to configure the deployment environment and control the scripting actions. The following list provides a short overview over the variables and their use.

All variables are defined in *SetEnv.cmd* or redefined in *NewSetEnv.cmd*. If you are using the scripting process “as is” you need only change these two files.

**Note:**

All scripts are documented in detail in the comments. Please refer to the scripts for detailed information about the scripting process.

3.4.2.1 Execution control variables

These variables control the way the scripting process is running

StkMode	Execution control.
StkOut	Screen output control.
StkConfig	Repository type
NewSetEnv	'On the fly' environment reconfiguration to be able to change environment variables without the need to create a new WinPE.
NewSetEnvPath	
NewSetEnvType	
NewSetEnvUseIndex	
MDP	Flag to signal ServerView IM's WinPE is used (MDP=1).

3.4.2.2 WinPE variables

WinPE does not really have proper user management; but for some tools an administrative user is needed. Any password for Administrator will do.

StkPw	WinPE password for Administrator
-------	----------------------------------

3.4.2.3 Drive Variables

DriveRepository	Drive letter for repository
DriveRepWrite	Drive letter for a writeable medium

3.4.2.4 System variables

NetLocation	Net share to be connected
NetUser	Net user name with write rights to net share
NetPassword	Password for net user
NetSecWait	Number of seconds to wait before connecting net share (if WinPE network initialisation is slow)
SvrSecWait	Depending on the system and the boot medium ServerView RAID (Fujitsu Technology Solution's RAID management tool) needs some time to initialize itself after it has been started. Usually 30 seconds are sufficient. Increase the wait time if the tool does not 'see' any or all RAID controllers.

3.4.2.5 Directory variables

DirRepRoot	Path from net share to repository
DirHardware	Folder which contains the hardware profile (with leading '\')
DirOs	Folder which contains the software profile (with leading '\')
DirScripts	Folder which contains the scripts (with leading '\')
DirTools	Folder which contains the tools (with leading '\')
DirStates	Writeable folder which will contain the states (with leading '\')

3.4.2.6 Path variables

PathRepRoot	Absolute path to repository root
PathHardware	Absolute path to the system-specific hardware profile (includes the system name, will be set during scripting process)

PathOs	Absolute path to the software profile
PathStates	Absolute path to the states folder (must be writeable)
TMP	Absolute path to a temporary folder (must be writeable)
Path	The path variable for WinPE, adapted to the scripting process.
LogFileOverwrite	Defines the logging behavior.
LogFileName	Log file name.
LogFile	Absolute path to log file. Set after system identification.

3.4.2.7 OS installation configuration variables

OSType	Which OS is to be installed.
DriveOS	Fixed network drive which will be connected to additional drivers in the repository.
RebootPause	Scripting process runs into 'pause' before rebooting to another WinPE version, e.g. to change the boot medium.
FileUnattended	Name of the unattend file for OS installation.
OOBEunattend	Name of the unattend.xml file for the OOBE phase in W2K8 installation.
ClearDisk	Whether to clear the disk before creating a partition.
QuickFormat	Whether to quickformat all partitions.

3.4.2.8 iRMC configuration variables

CfgBmc	Whether to configure the baseboard management controller.
CfgBmcType	BMC configuration file type.
FileBmcName	Standard configuration file name for BMC configuration. Assumes the file is located in the system's hardware folder, set after system identification
FileBmcPathAbsolute	Absolute path of BMC configuration file.

3.4.2.9 BIOS configuration variables

CfgBiosSaveRestore	Whether to save/restore the BIOS.
CfgBiosSRFile	Standard file name for save/restore BIOS. Assumes the file is located in the system's hardware folder.
CfgBiosSRFileAbsolute	Absolute path of save/restore BIOS file. If set overrides CfgBiosSRFile.
CfgBiosPassword	Whether to set the BIOS password.
NewBiosPassword	Note: Setting no NewBiosPassword means clearing the BIOS password. If no BIOS password exists, do not set OldBiosPassword.
OldBiosPassword	
CfgBiosBootorder	Whether to set the BIOS boot order.
BiosBootorder	String to define the BIOS boot order. Must conform to DeskView requirements, see DeskView documentation for details.

3.4.2.10 RAID configuration variables

CfgRaidSaveRestore	Whether to save or restore the system's array controllers.
CfgRaidFile	File name where to save to or restore from the array controller configuration
CfgRaidFileAbsolute	Absolute path of save/restore RAID file. If set overrides CfgRaidFile.
CfgRaidDirect	Whether to configure the system's first array controller directly. Note: Use SAVE/DEPLOY mode to configure all array controllers
CtrlNo	The logical number of the array controller to be configured.
RaidType	RAID type to configure.
DriveNo	Number of drives for RAID to use.
FastInit	Whether to fast-initialise the new array. Must be supported by the controller.
RaidCfgReboot	Whether to immediately reboot after clearing or configuring the array controller.
CfgClearRaid	Whether to clear all arrays from the array controller

3.4.2.11 AddOn software configuration variables

CfgAddOnPsp	Whether to install AddOn Software after OS.
PathRunOnceSystem	Absolute path to the RunOnce folder of the target system.
PathRunOnceNet	Absolute path to where all RunOnce data will be collected before installation (to create data.wim for W2K8 installation).
PathAddOnNet	Absolute path to additional software in the repository.
PathAddOnSystem	Absolute path of the folder from where the additional software will be installed from after system installation.
DriveOsAddOn	Fixed network drive which will be connected to SwAddOn.wim in the repository.
UseAddOnWimExist	Whether to use an existing SwAddOn.wim or create the WIM new for each deployment process.

3.4.3 Using SAVE Mode

SAVE mode is intended to enable users to save the hardware configuration of a PRIMERGY reference system to the system specific folder in the hardware repository. When configuring *SetEnv.cmd* for SAVE mode take the following list into consideration:

- Set StkMode to SAVE.
- Configure all necessary variables in *SetEnv.cmd*.
Note:
To use SAVE mode you need to specify a writable location for the repository.
- Depending on the configuration mode you mean to employ later to configure your PRIMERGY target system set CfgRaid, CfgBmc and CfgBiosSaveRestore in *SetEnv.cmd* to YES or NO.

Depending on the variables from *SetEnv.cmd* the SAVE process involves the following steps:

1. Boot into WinPE.
2. Identify PRIMERGY system and hardware.
3. Save RAID controller hardware configuration (optional).
4. Save specified iRMC settings (optional, depends on scu.cfg).
5. Save BIOS (optional).

3.4.4 Using DEPLOY Mode

DEPLOY mode is intended to enable users to restore the saved hardware configuration of a PRIMERGY reference system to identical PRIMERGY target systems or to configure the system's hardware using parameters before installing the OS.

When configuring *SetEnv.cmd* for DEPLOY mode take the following list into consideration:

- Set StkMode to DEPLOY.
- Configure all necessary variables in *SetEnv.cmd*.
- Setup the hardware profile folder *HW_PROFI<SystemName>* and the software profile folder *<OS>|<SystemName>* as needed.

Depending on the variables from *SetEnv.cmd* the DEPLOY process involves the following steps:

- Boot into WinPE.
- Identify PRIMERGY server and hardware
- Update system component firmware (optional).
- Configure RAID controller hardware by either replicating the saved controller configuration or by configuring the RAID controller according to the configuration values defined in SetEnv.cmd (optional).
- Configure the Baseboard Management Controller (optional).
- Remove any old partitions (clear disk 0) (optional).
- Create a primary boot partition labelled C: with maximum size for the OS.
- Format the boot partition and provide all necessary OS installation data.
- Unattended OS and software installation.
- Restore BIOS/CMOS configuration (optional) or set BIOS password (optional).
- Boot into OS and perform post-installation tasks (optional).

**Notes:**

Log files from the post-installation tasks can be found at:
%PathRunOnceSystem%ISTK\diag.

3.4.5 Step-by-step mode

The step-by-step mode assumes that a WinPE boot image is already booted, e.g. in another deployment environment.

Once this WinPE is booted, follow these steps:

- Connect to the Scripting Toolkit Repository
- Prepare the environment by calling *SetEnv.cmd*.
Make sure to configure all environment variables according to the step you intend to execute.
- Start the ServerControl Service (refer to *autoexec.cmd* for details).
- Call "ms.cmd STATE_<step>"

This will execute the configured Scripting Process step exclusively. Calling all steps one after the other will have the same result as running the scripting process all in one go.

4 Set up WinPE

The ServerView Installation Manager DVD contains a highly flexible WinPE image which is fully usable on all PRIMERGY servers.

In the following sections ServerView IM's WinPE is also referred to as MDP (Multiple Deployment Platform). It can be used for the deployment process of the ServerView Scripting Toolkit without needing to be changed.

If you consider using ServerView IM's WinPE you need to adapt the execution environment to configure how ServerView IM's WinPE runs.

If you consider using your own WinPE, you need to adapt your WinPE to support PRIMERGY servers.

4.1 Set up ServerView Installation Manager WinPE

To be able to use ServerView Installation Manager's WinPE you need ServerView IM's WIM file *boot.wim* and various additional files for configuration and extension of the basic WinPE.



Notes:

Starting with ServerView IM V11.13.12 the following WinPE boot images are provided on the DVD:

- boot.wim – x64 WinPE 5
- bootPE4.wim – x64 WinPE 4
- bootPE3.wim – x64 WinPE 3
- bootPE3x86.wim – x86 WinPE 3

Use WinPE 4 to install W2K12 and WinPE 5 to install W2K12 R2

4.1.1 Using ServerView IM WinPE on CD/DVD

Follow these steps to setup ServerView IM's WinPE for use with the ServerView Scripting Toolkit:

1. Create a folder to collect all data: e.g. *STK_WinPE*
2. From the ServerView IM DVD copy these files and folders to the root of *STK_WinPE*:
 - File *sources\boot.wim* from *<DVD root>* to *sources\boot.wim*
Note: select the required boot image as explained above.
 - *bootmgr* from *<DVD root>* to *bootmgr*
 - folder *boot* from *<DVD root>* to folder *boot*
 - folder *EFI* from *<DVD root>* to folder *EFI*
 - *SeStEE* from *<DVD root>* to *SeStEE*
3. In the root of *STK_WinPE* create a folder *setup*.
4. From *SCRIPTS32* in the ServerView Scripting Toolkit installation directory copy the folder *SVIM* to the folder *setup* in *STK_WinPE*
5. From *SCRIPT32* in the ServerView Scripting Toolkit installation directory copy *autoexec.cmd*, *DateTime.vbs*, *SetEnv.cmd* to *STK_WinPE\setup\SVIM\MDPISTK*
6. Adapt *SetEnv.cmd* in *STK_WinPE\setup\SVIM\MDPISTK* to your needs
7. Create a bootable CD/DVD with all data from *STK_WinPE*

4.1.2 Using ServerView IM WinPE with USB

Follow these steps to setup ServerView IM's WinPE for use with the ServerView Scripting Toolkit on a USB device:

1. Create a folder to collect all data: e.g. *STK_WinPE*
2. From the ServerView Installation Manager DVD copy these files and folders to the root of *STK_WinPE*:
 - File *sources\boot.wim* from *<DVD root>* to *sources\boot.wim*
Note: select the required boot image as explained above.
 - *bootmgr* from *<DVD root>* to *bootmgr*

- folder *boot* from *<DVD root>* to folder *boot*
 - folder *EFI* from *<DVD root>* to folder *EFI*
 - *SeStEE* from *<DVD root>* to *SeStEE*
3. In the root of *STK_WinPE* create a folder *setup*.
 4. From *SCRIPTS32* in the ServerView Scripting Toolkit installation directory copy the folder *SVIM* to the folder *setup* in *STK_WinPE*.
 5. From *SCRIPT32* in the ServerView Scripting Toolkit installation directory copy *autoexec.cmd*, *DateTime.vbs*, *SetEnv.cmd* to *STK_WinPE\setup\SVIM\MDPISTK*
 6. Adapt *SetEnv.cmd* in *STK_WinPE\setup\SVIM\MDPISTK* to your needs
 7. Using diskpart (from Vista or W2K8) partition and format your USB flash device with an NTFS file system and copy all data from *STK_WinPE* to the UFD.

4.1.3 Using ServerView IM WinPE with PXE

When using ServerView IM's WinPE with PXE all necessary files to configure the WinPE are retrieved from the PXE server via TFTP. You need to set up the PXE server to transfer both:

- the boot image via PXE.
- all additional files via TFTP.

Some files need to be located in a pre-defined folder at TFTP root.

4.1.3.1 Set up the TFTP structure

- From *SCRIPTS32* in the ServerView Scripting Toolkit installation directory copy the folder *SVIM* to your TFTP root folder.
- From *SCRIPT32* in the ServerView Scripting Toolkit installation directory copy *autoexec.cmd*, *DateTime.vbs*, *SetEnv.cmd* to *<TFTP root>\SVIM\MDPISTK*
- Adapt *SetEnv.cmd* in *<TFTP root>\SVIM\MDPISTK* to your needs

4.1.3.2 Set up the PXE files

1. Copy the following files and folders to a folder on your PXE server:
 - *<DVD root>\sources\boot.wim* to *<folder>\sources*Note: select the required boot image as explained above.

- All files (*boot.sdi*, *bootmgr.exe*, *pxeboot.n12*, *winpe.0*) from *<DVD root>\setup\WebUI\bootstrap_winpex86* to *<folder>*
 - *<DVD root>\boot\bcd* to *<folder>\boot*
 - *<DVD root>\boot\boot.sdi* to *<folder>\boot*
2. Note the IP-Address of your PXE server
 3. Using *bcdedit* adapt *boot\bcd* and set up the boot entry to fit to your PXE server. At the end of the boot entry add load options to let ServerView IM find the PXE server it originated from:
 - `bcdedit /set {<GUID>} loadoptions res=\\<IPaddress>:MDP`
 4. Make sure your PXE server knows and serves all new files.

4.2 Prepare your own WinPE

Set up your own WinPE with **WMI** and **Windows Script Host** support and extend WinPE's internal ram disk to at least 512 MB if you plan to use ServerView RAID to configure any array controller.

If you plan to use a network share for the repository make sure networking is started.

**Note:**

Use WinPE 4 to install W2K12 and WinPE 5 to install W2K12 R2

4.2.1 Setting up drivers

From ServerView IM DVD copy the driver tree to your WinPE build folder. The drivers for x64 WinPE are set up in the folder *<DVD root>\DRV\WinPEx64*.

Using the file *FilesToDelete.txt* remove all files mentioned in the file. Using the file *drivers_PE<PE-Version>.txt* from the driver folder root as reference, import all required drivers into your WinPE using *dism*. Import all drivers to support all PRIMERGY servers.

4.2.2 Add other components

For various scripting purposes like system identification and hardware configuration, the scripting process needs to start services. For this purpose *sc.exe* is required which must be placed into *windows\system32* of your WinPE.

- Open a matching Operating System WIM file.
Locate the required file, copy and place it into *windows\system32* of your WinPE.

Alternatively, place *sc.exe* into the folder *TOOLS64\STK*. The scripting process will copy these files into WinPE when they are required.

4.2.3 Adjust the WinPE's free memory

To be able to use ServerView Raid to configure the target system's RAID controller, at least 512 MB of writeable free memory within the WinPE ram disk are required.

4.2.4 Set up WinPE for the ServerView Scripting Toolkit

The final step to prepare your WinPE is to add the ServerView Scripting Toolkit specific files. We recommend you do the following:

- Add a folder *STK* to the root of your WinPE and add the following files from the repository folder:
- *autoexec.cmd*
- *DateTime.vbs*
- *SetEnv.cmd*
- Edit *SetEnv.cmd* from the *ISVIM* folder according to your environment.
- Place *autounattend.xml* from the repository folder to the root of your WinPE. Adapt if necessary.
- In *Windows\system32* of your WinPE edit *startnet.cmd* to start the scripting process using *StartNet.cmd* from the repository as reference.

5 Configuring and Installing a PRIMERGY Server

To begin unattended configuration and installation of your PRIMERGY system, you need to complete the following steps:

- Set up OS driver structure using ServerView Installation Manager's driver extraction tool from `<DVDroot>\Tools\DriverExtraction`
- Set up the repository structure for deployment
- Prepare the boot medium (see chapter "4 Set up WinPE")
- (Optional) Capture the hardware settings of the PRIMERGY reference system
- Prepare unattended Windows Installation
- Start installation

5.1 Set up OS driver structure with ServerView IM

On the ServerView IM DVD (V10.11.08 or later) navigate to folder `<DVDroot>\Tools\DriverExtraction`. Double-click *DriverExtract.exe* and follow the tool's instructions selecting the PRIMERGY System and the OS you intend to install. Save the driver tree to a dedicated folder.

5.2 Install a PRIMERGY Reference System with ServerView IM

If the hardware settings of a particular system need to be captured, a PRIMERGY Reference System needs to be configured. Configure both RAID arrays and BIOS parameters to your requirements.

5.3 Repository

The installation directory of the ServerView Scripting Toolkit is already set up to serve as repository for your deployment process (repository root) on your deployment server. See chapter “3.3 The Repository Structure” for details.

Change either the *repository* folder into a network share or copy the contents of the folder to a network share on your deployment server. Create a local user account on your deployment server for repository access during deployment of the PRIMERGY target system.

5.4 Capture Server Hardware Configuration

Set the deployment process of the prepared boot image to ‘SAVE’ mode by editing *SetEnv.cmd*. Change all variables in *SetEnv.cmd* to your needs and make sure your repository is located on a write-accessible medium (USB, net share).

**Note:**

Save and restore of hardware configuration can only be done on matching PRIMERGY systems.

5.5 Prepare an unattended Windows installation

**Note:**

To use the AddOn-Software feature, you need to provide the tool *imagex* from the Microsoft's Windows Automated Installation Kit or from the OEM Preinstallation Kit.

Place the x64 versions of *imagex* into a folder *imagex* within the *ITTOOLS64* folder.

For each system type to be deployed create a system folder in the folder *<SoftwareProfile>*.

Example:

```
<RepositoryRoot>\W2K12R2\RX300S8
```

Copy the folder *sources* and the file *setup.exe* from your original Microsoft Windows installation media into the folder *<SoftwareProfile>*.

To set up the OS driver tree create a folder *drivers* within the *<SystemName>* folder. To this folder copy all driver folders which were created from ServerView IM's DriverExtraction tool (see chapter "5.1 Set up OS driver structure with ServerView IM").

Set up the unattended answer files (*unattend.xml* and *OOBEunattend.xml*) in the *<RepositoryRoot>|<OS>|<SystemName>* directory (see chapter "5.6 Modifying the answer file" for details) and adapt as required.

Copy *SetupComplete.cmd* to *<RepositoryRoot>|<OS>|<SystemName>* .

5.6 Modifying the answer file

The system subdirectory *<SoftwareProfile>|<SystemName>* needs to contain the unattended installation answer files *unattend.xml* and *OOBEunattend.xml*. The master script will use these files during the OS installation process.

It is recommend to set up the specific unattended installation answer file using the Windows System Image Manager from Microsoft's Windows Automated Installation Kit or from the OEM Preinstallation Kit.

Preconfigured answer files for various OS versions (*unattend_<OS>.xml* and *OOBEunattend.xml*) are located in the *SCRIPTS32* folder. Copy these files to the destination folder *<SoftwareProfile>|<SystemName>* in the repository and open them using the Windows System Image Manager from Microsoft's Windows Automated Installation Kit or from the OEM Preinstallation Kit.

In *unattend.xml* change all components according to your needs and make sure to leave the component 'RunSynchronous' in section 'auditUser' intact.

In *OOBEunattend.xml* change all components according to your needs and make sure to leave the component 'FirstLogonCommands' in section 'oobeSystem' intact.

5.7 Start Unattended Installation

Change the BIOS boot order of your target server to boot your installation medium, insert the medium and reboot the system. This will start the unattended configuration and installation session.



Note:

If the target system already has valid disk partition information, the unattended installation can run into problems when the RAID configuration is restored to the target system.

Make sure all existing partition information on your target system is deleted before starting deployment (e.g. set `ClrDisk` to `YES`)

6 Utilities

For detailed information on the use of the utilities please refer to the WinPE Tools Documentation.

These utilities are distributed with the ServerView Scripting Toolkit:

- BIOS configuration
- DeskView DeskFlash
- DeskView BiosSet
- AfuWin
- RAID configuration
- ServerView RAID (amCLI)
- System identification and RSB configuration
- ServerControl Service
- SCConfig

6.1 Additional utilities required

To use the AddOn-Software feature, you need to provide the tool *imagex* from the Microsoft's Windows Automated Installation Kit or from the OEM Preinstallation Kit.

Place the x64 version of *imagex* into a folder *imagex* within the *ITTOOLS64* folder.

7 Addendum

7.1 Supported Systems

PRIMERGY Blade Servers

- BX620S5, BX620S6
- BX920S1, BX920S2, BX920S3, BX920S4,
- BX922S2
- BX924S2, BX924S3, BX924S4,
- BX960S1
- BX2560M1, BX2580M1

PRIMERGY Cloud Servers

- CX122S1
- CX250S1, CX250S2
- CX270S1, CX270S2
- CX272S1
- CX2550M1, CX2570M1

PRIMERGY Micro Servers

- MX130S1, MX130S2

PRIMERGY Rack Servers

- RX100S5, RX100S6, RX100S7, RX100S7p, RX100S8
- RX200S5, RX200S6, RX200S7, RX200S8
- RX300S5, RX300S6, RX300S7, RX300S8

- RX350S7, RX350S8
- RX500S7
- RX600S5, RX600S6
- RX900S1, RX900S2
- RX1330M1
- RX2520M1, RX2530M1, RX2540M1, RX2560M1
- RX4770M1

PRIMERGY Storage Servers

- SX150S8, SX350S8

PRIMERGY Tower Servers

- TX100S1, TX100S2, TX100S3, TX100S3p
- TX120F, TX120S1, TX120S2, TX120S3, TX120S3p
- TX140S1, TX140S1p, TX140S2
- TX150S6, TX150S7, TX150S8
- TX200S5, TX200S6, TX200S7
- TX300S5, TX300S6, TX300S7, TX300S8
- TX1310M1, TX1320M1, TX1330M1
- TX2540M1, TX2560M1

PRIMEQUEST Servers

- PRIMEQUEST 1400L, 1400E, 1400S
- PRIMEQUEST 1800L, 1800E
- PRIMEQUEST 1400L2, 1400E2, 1400S2
- PRIMEQUEST 1800L2, 1800E2
- PRIMEQUEST 2400E, 2400L, 2800B, 2800E, 2800L
- PRIMEQUEST 2400E2, 2400L2, 2400S2, 2800B2, 2800E2, 2800L2

7.2 Supported Controllers

For the list of supported controllers please refer to version.pdf of ServerView RAID, which is located in the repository within the *TOOLS64ISVRAID* folder.

7.3 Released Utilities Versions

BIOS configuration

DeskView DeskFlash	6.65.0181
DeskView BiosSet	6.65.0181
AMI AfuWin	3.03

RAID configuration

ServerView RAID (amCLI)	6.1.4
-------------------------	-------

System identification and RSB configuration

ServerControl Service	7.01.10
SCConfig	7.01.10

7.4 Supported Operating Systems

- Microsoft Windows Server 2012 [R2]

7.5 Restrictions

The following restrictions apply to V4.4 of the ServerView Scripting Toolkit:

- 64-bit WinPE required

- BIOS cannot be saved/restored or configured for the following :
TX120 S2,
RX600 S5, RX600 S6, RX900 S1, RX900 S2
BX620 S5, BX620 S6
BX920 S1, BX920 S2, BX922 S2, BX924 S2
- BIOS Boot Order setting is only supported for systems with UEFI BIOS

7.6 Deployment Process Examples

The following examples show how the variables in *SetEnv.cmd* are to be set to configure the hardware and install the OS, including a detailed description of the Deployment process steps.

**Note:**

W2K8 installation should be executed with WinPE 3, W2K12 installation should be executed with WinPE 4, W2K12 R2 installation should be executed with WinPE 5.

7.6.1 Install W212 R2 on RX300S8 WinPE x64 with BIOS configuration

7.6.1.1 Set up the environment

- Set up your repository folder for net access.
- Make sure the tool *imagex.exe* from ADK resides in the folder *imagex* in *TOOLS64*.
- In the repository set up a folder *W2K12R2* and from your OS medium copy the folder *sources* and the file *setup.exe* to *W2K12R2*.
- In folder *W2K12R2* create a folder *RX300S8* and place the *drivers* folder and correct *unattend.xml* and *OOBEunattend.xml* files inside. Copy *SetupComplete.cmd* from *SCRIPTS32* to *RX300S8*.
See chapters "[5.4 Capture Server Hardware](#)" and "[5.6 Modifying the answer file](#)" and "[5.5 Prepare an unattended Windows installation](#)" for details.
- If a specific disk configuration is required, copy *DiskClr.txt* and *DiskPart.txt* from *SCRIPTS32* to *RX300S8* and change as required. Make sure the disk configuration in *unattend.xml* and *DiskPart.txt* do not clash.

7.6.1.2 Configuring SetEnv.cmd

Most variables in *SetEnv.cmd* are set up for a working deployment process, so this list only contains the specific changes for this deployment process.

Variable	Value	Remark
StkMode	DEPLOY	
StkOutput	MAX	
NetLocation	\\<IPaddress>\<ShareName>	
NetUser	<Server>\<UserName>	
NetPassword	<Password>	
CfgRaidSaveRestore	NO	RAID configuration will be done 'directly', configuring 3 disks to RAID5.
CfgRaidDirect	YES	
CtrlNo	0	
RaidType	5	
DriveNo	3	
FastInit	YES	
RaidCfgReboot	NO	
CfgBiosPassword	YES	
NewBiosPassword=	<NewBiosPassword>	
OldBiosPassword=	<OldBiosPassword>	
ClearDisk	YES	
OSType	W2K12R2	Install W2K12 R2 from DirOS
RebootPause	NO	
DirOs	W2K12R2	
CfgAddOnPsp	YES	Install AddOn software
PathRunOnceNet	C:\RunOnce	
PathRunOnceSystem	C:\RunOnce	

7.6.1.3 Deployment process

Depending on how the deployment process is set up within your environment, the various reboots into the different environments need to be induced at the correct times, e.g. by configuring your PXE server or adding steps to set up the BIOS boot order accordingly.

- Boot into WinPE x64, connect to repository.
- Detect system type, setup state folder, start log file.
- Configure RAID array.
- Clear disk as defined in ClrDisk.txt.
- Partition disk as defined in DiskPart.txt.
- Copy AddOn software to C:.
- Setup post-installation tasks (*RunOnce.cmd*).
- Setup SwAddOn.wim from data on C:
- Start OS installation from repository
- Set BIOS password
- Reboot from disk, finalise OS installation and perform post-installation tasks
- Install PrimeUp
- Install PSPs
- Reboot into OS.